

SEQUENCE LISTING

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<120> NPC1L1 (NPC3) AND METHODS OF USE THEREOF

<130> JB01603-K-US

<160> 50

<170> PatentIn version 3.1

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Leu Ser Ser Asp Gly Gln Val Ile Ala Ser Gln Phe Met Ala Tyr			
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Ser Tyr Leu Gly Pro Asp Val Asn Gln Ala Leu Val Gln Glu Glu	
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Lys Leu Ala Ser Glu Ala Ala Val Ala Pro Glu Pro Ser Cys Pro	
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Tyr Asn Gly Pro Asn Thr Thr Phe Ala Cys Cys Ser Thr Lys Gln Leu
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Cys Pro Ala Cys Ser Asp Asn Phe Val Ser Leu His Cys His Asn Thr
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 245 250 255

Gln Asp Cys Ala Ala Ser Cys Pro Val Ile Pro Pro Pro Glu Ala Leu
 260 265 270

Arg Pro Ser Phe Tyr Met Gly Arg Met Pro Gly Trp Leu Ala Leu Ile
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Glu Ala Pro Lys Leu Pro His Lys His Lys Leu Ser Pro His Thr Ile
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370 375 380

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Asn Asn Tyr Pro Ala Asp Asp Pro Arg Met Ala Gln Ala Lys Leu Trp

580

585

590

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Cys Ser Arg Val Ala Val Glu Ser Lys Ala Thr Leu Gly Leu Gly Gly
 660 665 670

Val Ile Val Val Leu Gly Ala Val Leu Ala Ala Met Gly Phe Tyr Ser
 675 680 685

Tyr Leu Gly Val Pro Ser Ser Leu Val Ile Ile Gln Val Val Pro Phe
 690 695 700

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Gly Arg Thr Leu Gly Ser Val Ala Pro Ser Met Leu Leu Cys Ser Leu
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Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala
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Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Ile Ile Leu Asp Phe
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Leu Leu	Gly Leu Leu	His Gly	Leu Val Phe	Leu Pro	Val Val Leu
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<212> DNA

<213> Homo sapiens

<220>

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 cgc ttg gcc cag agt gag cct tac aca acc atc cac cag cct ggc tac 96
 Arg Leu Ala Gln Ser Glu Pro Tyr Thr Ile His Gln Pro Gly Tyr
 20 25 30
 tgc gcc ttc tat gac gaa tgt ggg aag aac cca gag ctg tct gga agc 144
 Cys Ala Phe Tyr Asp Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Ser
 35 40 45
 ctc atg aca ctc tcc aac gtg tcc tgc ctg tcc aac acg ccg gcc cgc 192
 Leu Met Thr Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg
 50 55 60
 aag atc aca ggt gat cac ctg atc cta tta cag aag atc tgc ccc cgc 240
 Lys Ile Thr Gly Asp His Leu Ile Leu Leu Gln Lys Ile Cys Pro Arg
 65 70 75 80
 ctc tac acc ggc ccc aac acc caa gcc tgc tgc tcc gcc aag cag ctg 288
 Leu Tyr Thr Gly Pro Asn Thr Gln Ala Cys Cys Ser Ala Lys Gln Leu
 85 90 95
 gta tca ctg gaa gcg agt ctg tcg atc acc aag gcc ctc ctc acc cgc 336
 Val Ser Leu Glu Ala Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg
 100 105 110

tgc cca gcc tgc tct gac aat ttt gtg aac ctg cac tgc cac aac acg Cys Pro Ala Cys Ser Asp Asn Phe Val Asn Leu His Cys His Asn Thr 115 120 125	384
tgc agc ccc aat cag agc ctc ttc atc aat gtg acc cgc gtg gcc cag Cys Ser Pro Asn Gln Ser Leu Phe Ile Asn Val Thr Arg Val Ala Gln 130 135 140	432
cta ggg gct gga caa ctc cca gct gtg gtg gcc tat gag gcc ttc tac Leu Gly Ala Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr 145 150 155 160	480
cag cat agc ttt gcc gag cag agc tat gac tcc tgc agc cgt gtg cgc Gln His Ser Phe Ala Glu Gln Ser Tyr Asp Ser Cys Ser Arg Val Arg 165 170 175	528
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cct ggc cag gcc gtg ggg agt ggg att cag cct ctg aat gag ggg gtt Pro Gly Gln Ala Val Gly Ser Gly Ile Gln Pro Leu Asn Glu Gly Val 225 230 235 240	720
gca cgt tgc aat gag tcc caa ggt gac gac gtg gcg acc tgc tcc tgc Ala Arg Cys Asn Glu Ser Gln Gly Asp Asp Val Ala Thr Cys Ser Cys 245 250 255	768
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Phe Gly Pro Phe Phe Arg Thr Asn Gln Val Ile Leu Thr Ala Pro Asn	
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420 425 430	
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Ser Gly Ile Leu Asp Leu Asp Leu Leu Leu Glu Leu Leu Glu Leu Gln	
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Glu Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Gln Arg Asn	
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Ser Leu Tyr Asp Cys Cys Ile Asn Ser Leu Leu Gln Tyr Phe Gln Asn	
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Asn Arg Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Met Gly Gln	
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acc tcc caa gtc gac tgg aag gac cat ttt ctg tac tgt gcc aat gcc	1584
Thr Ser Gln Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala	
515 520 525	
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Pro Leu Thr Phe Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Met Ala	
530 535 540	
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Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Ile Gly Gly Tyr Lys	
545 550 555 560	
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Gly Lys Asp Tyr Ser Glu Ala Glu Ala Leu Ile Met Thr Phe Ser Leu	
565 570 575	
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Asn Asn Tyr Pro Ala Gly Asp Pro Arg Leu Ala Gln Ala Lys Leu Trp	
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att gtc ata ttc ctg tac atc tct ctg gcc ctg ggc agc tat tcc agc Ile Val Ile Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Ser 645 650 655			1968
tgg agc cga gtg atg gtg gac tcc aag gcc acg ctg ggc ctc ggc ggg Trp Ser Arg Val Met Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly 660 665 670			2016
gtg gcc gtg gtc ctg gga gca gtc atg gct gcc atg ggc ttc ttc tcc Val Ala Val Val Leu Gly Ala Val Met Ala Ala Met Gly Phe Phe Ser 675 680 685			2064
tac ttg ggt atc cgc tcc tcc ctg gtc atc ctg caa gtg gtt cct ttc Tyr Leu Gly Ile Arg Ser Ser Leu Val Ile Leu Gln Val Val Pro Phe 690 695 700			2112
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ctc ctg cag atg tca gcc ttt gtg gcc ctg ctc tcc ctg gac agc aag Leu Leu Gln Met Ser Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys 785 790 795 800			2400
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caa aag gct tat gcc ccc ttc ctg ctg cac tgg atc act cga ggt gtt Gln Lys Ala Tyr Ala Pro Phe Leu Leu His Trp Ile Thr Arg Gly Val 835 840 845			2544

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gag gct ggg atg aat gcc atc tgc tcc agt gca ggc tgc aac aac ttc Glu Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Asn Asn Phe 915 920 925	2784
tcc ttc acc cag aag atc cag tat gcc aca gag ttc cct gag cag tct Ser Phe Thr Gln Lys Ile Gln Tyr Ala Thr Glu Phe Pro Glu Gln Ser 930 935 940	2832
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ctg acc ccg tcc tcc tgc tgc cgc ctt tat ata tct ggc ccc aat aag Leu Thr Pro Ser Ser Cys Cys Arg Leu Tyr Ile Ser Gly Pro Asn Lys 965 970 975	2928
gac aag ttc tgc ccc tcg acc gtc aac tct ctg aac tgc cta aag aac Asp Lys Phe Cys Pro Ser Thr Val Asn Ser Leu Asn Cys Leu Lys Asn 980 985 990	2976
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Asn Val Phe Tyr Glu Gln Tyr Leu Thr Ile Leu Pro Glu Gly Leu	
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Phe Met Leu Ser Leu Cys Leu Val Pro Thr Phe Ala Val Ser Cys	
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ctc ctg ctg ggc ctg gac ctg cgc tcc ggc ctc ctc aac ctg ctc	3429
Leu Leu Leu Gly Leu Asp Leu Arg Ser Gly Leu Leu Asn Leu Leu	
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tcc att gtc atg atc ctc gtg gac act gtc ggc ttc atg gcc ctg	3474
Ser Ile Val Met Ile Leu Val Asp Thr Val Gly Phe Met Ala Leu	
1145 1150 1155	
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Trp Asp Ile Ser Tyr Asn Ala Val Ser Leu Ile Asn Leu Val Ser	
1160 1165 1170	
gcg gtg ggc atg tct gtg gag ttt gtg tcc cac att acc cgc tcc	3564
Ala Val Gly Met Ser Val Glu Phe Val Ser His Ile Thr Arg Ser	
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ttt gcc atc agc acc aag ccc acc tgg ctg gag agg gcc aaa gag	3609
Phe Ala Ile Ser Thr Lys Pro Thr Trp Leu Glu Arg Ala Lys Glu	
1190 1195 1200	
gcc acc atc tct atg gga agt gcg gtg ttt gca ggt gtg gcc atg	3654
Ala Thr Ile Ser Met Gly Ser Ala Val Phe Ala Gly Val Ala Met	
1205 1210 1215	
acc aac ctg cct ggc atc ctt gtc ctg ggc ctc gcc aag gcc cag	3699
Thr Asn Leu Pro Gly Ile Leu Val Leu Gly Leu Ala Lys Ala Gln	
1220 1225 1230	
ctc att cag atc ttc ttc ttc cgc ctc aac ctc ctg atc act ctg	3744
Leu Ile Gln Ile Phe Phe Phe Arg Leu Asn Leu Leu Ile Thr Leu	
1235 1240 1245	
ctg ggc ctg ctg cat ggc ttg gtc ttc ctg ccc gtc atc ctc agc	3789
Leu Gly Leu Leu His Gly Leu Val Phe Leu Pro Val Ile Leu Ser	
1250 1255 1260	
tac gtg ggg cct gac gtt aac ccg gct ctg gca ctg gag cag aag	3834
Tyr Val Gly Pro Asp Val Asn Pro Ala Leu Ala Leu Glu Gln Lys	
1265 1270 1275	
cgg gct gag gag gcg gtg gca gca gtc atg gtg gcc tct tgc cca	3879
Arg Ala Glu Glu Ala Val Ala Ala Val Met Val Ala Ser Cys Pro	
1280 1285 1290	
aat cac ccc tcc cga gtc tcc aca gct gac aac atc tat gtc aac	3924
Asn His Pro Ser Arg Val Ser Thr Ala Asp Asn Ile Tyr Val Asn	
1295 1300 1305	
cac agc ttt gaa ggt tct atc aaa ggt gct ggt gcc atc agc aac	3969

His Ser Phe Glu Gly Ser Ile Lys Gly Ala Gly Ala Ile Ser Asn
 1310 1315 1320

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 1325 1330

3999

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<211> 1332

<212> PRT

<213> Homo sapiens

<400> 4

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Cys Ala Phe Tyr Asp Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Ser
 35 40 45

Leu Met Thr Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg
 50 55 60

Lys Ile Thr Gly Asp His Leu Ile Leu Leu Gln Lys Ile Cys Pro Arg
 65 70 75 80

Leu Tyr Thr Gly Pro Asn Thr Gln Ala Cys Cys Ser Ala Lys Gln Leu
 85 90 95

Val Ser Leu Glu Ala Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg
 100 105 110

Cys Pro Ala Cys Ser Asp Asn Phe Val Asn Leu His Cys His Asn Thr
 115 120 125

Cys Ser Pro Asn Gln Ser Leu Phe Ile Asn Val Thr Arg Val Ala Gln
 130 135 140

Leu Gly Ala Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr
 145 150 155 160

Gln His Ser Phe Ala Glu Gln Ser Tyr Asp Ser Cys Ser Arg Val Arg

165	170	175
Val Pro Ala Ala Ala Thr Leu Ala Val Gly Thr Met Cys Gly Val Tyr		
180	185	190
Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp		
195	200	205
Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu		
210	215	220
Pro Gly Gln Ala Val Gly Ser Gly Ile Gln Pro Leu Asn Glu Gly Val		
225	230	235
Ala Arg Cys Asn Glu Ser Gln Gly Asp Asp Val Ala Thr Cys Ser Cys		
245	250	255
Gln Asp Cys Ala Ala Ser Cys Pro Ala Ile Ala Arg Pro Gln Ala Leu		
260	265	270
Asp Ser Thr Phe Tyr Leu Gly Gln Met Pro Gly Ser Leu Val Leu Ile		
275	280	285
Ile Ile Leu Cys Ser Val Phe Ala Val Val Thr Ile Leu Leu Val Gly		
290	295	300
Phe Arg Val Ala Pro Ala Arg Asp Lys Ser Lys Met Val Asp Pro Lys		
305	310	315
Lys Gly Thr Ser Leu Ser Asp Lys Leu Ser Phe Ser Thr His Thr Leu		
325	330	335
Leu Gly Gln Phe Phe Gln Gly Trp Gly Thr Trp Val Ala Ser Trp Pro		
340	345	350
Leu Thr Ile Leu Val Leu Ser Val Ile Pro Val Val Ala Leu Ala Ala		
355	360	365
Gly Leu Val Phe Thr Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser		
370	375	380
Ala Pro Asn Ser Gln Ala Arg Ser Glu Lys Ala Phe His Asp Gln His		
385	390	395
Phe Gly Pro Phe Phe Arg Thr Asn Gln Val Ile Leu Thr Ala Pro Asn		
405	410	415

Arg Ser Ser Tyr Arg Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe
420 425 430

Ser Gly Ile Leu Asp Leu Asp Leu Leu Leu Glu Leu Leu Glu Leu Gln
435 440 445

Glu Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Gln Arg Asn
450 455 460

Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Asp Asn Thr
465 470 475 480

Ser Leu Tyr Asp Cys Cys Ile Asn Ser Leu Leu Gln Tyr Phe Gln Asn
485 490 495

Asn Arg Thr Leu Leu Leu Thr Ala Asn Gln Thr Leu Met Gly Gln
500 505 510

Thr Ser Gln Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala
515 520 525

Pro Leu Thr Phe Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Met Ala
530 535 540

Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Ile Gly Gly Tyr Lys
545 550 555 560

Gly Lys Asp Tyr Ser Glu Ala Glu Ala Leu Ile Met Thr Phe Ser Leu
565 570 575

Asn Asn Tyr Pro Ala Gly Asp Pro Arg Leu Ala Gln Ala Lys Leu Trp
580 585 590

Glu Glu Ala Phe Leu Glu Glu Met Arg Ala Phe Gln Arg Arg Met Ala
595 600 605

Gly Met Phe Gln Val Thr Phe Thr Ala Glu Arg Ser Leu Glu Asp Glu
610 615 620

Ile Asn Arg Thr Thr Ala Glu Asp Leu Pro Ile Phe Ala Thr Ser Tyr
625 630 635 640

Ile Val Ile Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Ser
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Trp Ser Arg Val Met Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly
660 665 670

Val Ala Val Val Leu Gly Ala Val Met Ala Ala Met Gly Phe Phe Ser
675 680 685

Tyr Leu Gly Ile Arg Ser Ser Leu Val Ile Leu Gln Val Val Pro Phe
690 695 700

Leu Val Leu Ser Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu
705 710 715 720

Tyr Gln Arg Leu Pro Arg Arg Pro Gly Glu Pro Arg Glu Val His Ile
725 730 735

Gly Arg Ala Leu Gly Arg Val Ala Pro Ser Met Leu Leu Cys Ser Leu
740 745 750

Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala
755 760 765

Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Val Ile Leu Asp Phe
770 775 780

Leu Leu Gln Met Ser Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys
785 790 795 800

Arg Gln Glu Ala Ser Arg Leu Asp Val Cys Cys Cys Val Lys Pro Gln
805 810 815

Glu Leu Pro Pro Pro Gly Gln Gly Glu Gly Leu Leu Leu Gly Phe Phe
820 825 830

Gln Lys Ala Tyr Ala Pro Phe Leu Leu His Trp Ile Thr Arg Gly Val
835 840 845

Val Leu Leu Leu Phe Leu Ala Leu Phe Gly Val Ser Leu Tyr Ser Met
850 855 860

Cys His Ile Ser Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp
865 870 875 880

Ser Tyr Leu Leu Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Phe Glu Val
885 890 895

Gly Ala Pro Val Tyr Phe Val Thr Thr Leu Gly Tyr Asn Phe Ser Ser
 900 905 910

Glu Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Asn Asn Phe
 915 920 925

Ser Phe Thr Gln Lys Ile Gln Tyr Ala Thr Glu Phe Pro Glu Gln Ser
 930 935 940

Tyr Leu Ala Ile Pro Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp
 945 950 955 960

Leu Thr Pro Ser Ser Cys Cys Arg Leu Tyr Ile Ser Gly Pro Asn Lys
 965 970 975

Asp Lys Phe Cys Pro Ser Thr Val Asn Ser Leu Asn Cys Leu Lys Asn
 980 985 990

Cys Met Ser Ile Thr Met Gly Ser Val Arg Pro Ser Val Glu Gln Phe
 995 1000 1005

His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Arg Pro Asn Ile Lys
 1010 1015 1020

Cys Pro Lys Gly Gly Leu Ala Ala Tyr Ser Thr Ser Val Asn Leu
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Thr Ser Asp Gly Gln Val Leu Ala Ser Arg Phe Met Ala Tyr His
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Lys Pro Leu Lys Asn Ser Gln Asp Tyr Thr Glu Ala Leu Arg Ala
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Ala Arg Glu Leu Ala Ala Asn Ile Thr Ala Asp Leu Arg Lys Val
 1070 1075 1080

Pro Gly Thr Asp Pro Ala Phe Glu Val Phe Pro Tyr Thr Ile Thr
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Asn Val Phe Tyr Glu Gln Tyr Leu Thr Ile Leu Pro Glu Gly Leu
 1100 1105 1110

Phe Met Leu Ser Leu Cys Leu Val Pro Thr Phe Ala Val Ser Cys
 1115 1120 1125

Leu Leu Leu Gly Leu Asp Leu Arg Ser Gly Leu Leu Asn Leu Leu

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Trp Asp Ile Ser Tyr Asn Ala Val Ser Leu Ile Asn Leu Val Ser				
1160		1165		1170
Ala Val Gly Met Ser Val Glu Phe Val Ser His Ile Thr Arg Ser				
1175		1180		1185
Phe Ala Ile Ser Thr Lys Pro Thr Trp Leu Glu Arg Ala Lys Glu				
1190		1195		1200
Ala Thr Ile Ser Met Gly Ser Ala Val Phe Ala Gly Val Ala Met				
1205		1210		1215
Thr Asn Leu Pro Gly Ile Leu Val Leu Gly Leu Ala Lys Ala Gln				
1220		1225		1230
Leu Ile Gln Ile Phe Phe Phe Arg Leu Asn Leu Leu Ile Thr Leu				
1235		1240		1245
Leu Gly Leu Leu His Gly Leu Val Phe Leu Pro Val Ile Leu Ser				
1250		1255		1260
Tyr Val Gly Pro Asp Val Asn Pro Ala Leu Ala Leu Glu Gln Lys				
1265		1270		1275
Arg Ala Glu Glu Ala Val Ala Ala Val Met Val Ala Ser Cys Pro				
1280		1285		1290
Asn His Pro Ser Arg Val Ser Thr Ala Asp Asn Ile Tyr Val Asn				
1295		1300		1305
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<212> DNA

<213> Rattus sp.

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<211> 458

<212> DNA

<213> Rattus sp.

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458

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<211> 896

<212> DNA

<213> Rattus sp.

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<211> 3124

<212> DNA

<213> Rattus sp.

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<211> 4484

<212> DNA

<213> Rattus sp.

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<211> 3993

<212> DNA

<213> Rattus sp.

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gcnwsngarg cngcngtngc nccngarccn wsntgyccnc artayccnws nccngcngay	3900
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Ser Ala Gln Gly Glu Leu Tyr Thr Pro Thr His Lys Ala Gly Phe Cys	
20 25 30	
acc ttt tat gaa gag tgt ggg aag aac cca gag ctt tct gga ggc ctc	144
Thr Phe Tyr Glu Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Gly Leu	
35 40 45	
aca tca cta tcc aat atc tcc tgc ttg tct aat acc cca gcc cgc cat	192
Thr Ser Leu Ser Asn Ile Ser Cys Leu Ser Asn Thr Pro Ala Arg His	
50 55 60	
gtc aca ggt gac cac ctg gct ctt ctc cag cgc gtc tgt ccc cgc cta	240
Val Thr Gly Asp His Leu Ala Leu Leu Gln Arg Val Cys Pro Arg Leu	
65 70 75 80	
tac aat ggc ccc aat gac acc tat gcc tgt tgc tct acc aag cag ctg	288
Tyr Asn Gly Pro Asn Asp Thr Tyr Ala Cys Cys Ser Thr Lys Gln Leu	
85 90 95	
gtg tca tta gac agt agc ctg tct atc acc aag gcc ctc ctt aca cgc	336
Val Ser Leu Asp Ser Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg	
100 105 110	
tgc ccg gca tgc tct gaa aat ttt gtg agc ata cac tgt cat aat acc	384
Cys Pro Ala Cys Ser Glu Asn Phe Val Ser Ile His Cys His Asn Thr	
115 120 125	
tgc agc cct gac cag agc ctc ttc atc aat gtt act cgc gtg gtt cag	432
Cys Ser Pro Asp Gln Ser Leu Phe Ile Asn Val Thr Arg Val Val Gln	
130 135 140	
cgg gac cct gga cag ctt cct gct gtg gtg gcc tat gag gcc ttt tat	480
Arg Asp Pro Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr	
145 150 155 160	
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Gln Arg Ser Phe Ala Glu Lys Ala Tyr Glu Ser Cys Ser Arg Val Arg	
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atc cct gca gct gcc tcg ctg gct gtg ggc agc atg tgt gga gtg tat	576
Ile Pro Ala Ala Ala Ser Leu Ala Val Gly Ser Met Cys Gly Val Tyr	
180 185 190	
ggc tct gcc ctc tgc aat gct cag cgc tgg ctc aac ttc caa gga gac	624
Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp	
195 200 205	
aca ggg aat ggc ctg gct ccg ctg gac atc acc ttc cac ctc ttg gag	672
Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu	
210 215 220	

cct ggc cag gcc ctg gca gat ggg atg aag cca ctg gat ggg aag atc Pro Gly Gln Ala Leu Ala Asp Gly Met Lys Pro Leu Asp Gly Lys Ile 225 230 235 240	720
aca ccc tgc aat gag tcc cag ggt gaa gac tcg gca gcc tgt tcc tgc Thr Pro Cys Asn Glu Ser Gln Gly Glu Asp Ser Ala Ala Cys Ser Cys 245 250 255	768
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gaa gcc ccc aac ctc cct cgt aag cgc aga ttc tca cct cac act gtc Glu Ala Pro Asn Leu Pro Arg Lys Arg Arg Phe Ser Pro His Thr Val 325 330 335	1008
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agg tcc agc tac aag tac gac tcc ctg ctg cta ggg ccc aag aac ttc Arg Ser Ser Tyr Lys Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe 420 425 430	1296
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atc tcc ctc cag gac atc tgc tat gct ccc ctc aac ccg cat aac acc	1440

Ile Ser Leu Gln Asp	Ile Cys Tyr Ala Pro Leu Asn Pro His Asn Thr	
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agc ctc act gac tgc tgt gtc aac agc ctc ctt caa tac ttc cag aac		1488
Ser Leu Thr Asp Cys Cys Val Asn Ser Leu Leu Gln Tyr Phe Gln Asn		
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aac cac aca ctc ctg ctg ctc aca gcc aat cag act ctg aat ggc cag		1536
Asn His Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Asn Gly Gln		
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acc tcc ctg gtg gac tgg aag gac cat ttc ctc tac tgt gcc aat gcc		1584
Thr Ser Leu Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala		
	515 520 525	
cct ctc acg tac aaa gat ggc aca gcc ctg gcc ctg agc tgc ata gct		1632
Pro Leu Thr Tyr Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Ile Ala		
	530 535 540	
gac tac ggg gca cct gtc ttc ccc ttc ctt gct gtt ggg ggc tac caa		1680
Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Val Gly Gly Tyr Gln		
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ggg acg gac tac tgc gag gca gaa gcc ctg atc ata acc ttc tct atc		1728
Gly Thr Asp Tyr Ser Glu Ala Glu Ala Leu Ile Ile Thr Phe Ser Ile		
	565 570 575	
aat aac tac ccc gct gat gat ccc cgc atg gcc cac gcc aag ctc tgg		1776
Asn Asn Tyr Pro Ala Asp Asp Pro Arg Met Ala His Ala Lys Leu Trp		
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Glu Glu Ala Phe Leu Lys Glu Met Gln Ser Phe Gln Arg Ser Thr Ala		
	595 600 605	
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Asp Lys Phe Gln Ile Ala Phe Ser Ala Glu Arg Ser Leu Glu Asp Glu		
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atc aat cgc act acc atc cag gac ctg cct gtc ttt gcc atc agc tac		1920
Ile Asn Arg Thr Thr Ile Gln Asp Leu Pro Val Phe Ala Ile Ser Tyr		
	625 630 635 640	
ctt atc gtc ttc ctg tac atc tcc ctg gcc ctg ggc agc tac tcc aga		1968
Leu Ile Val Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Arg		
	645 650 655	
tgg agc cga gtt gcg gtg gat tcc aag gct act ctg ggc cta ggt ggg		2016
Trp Ser Arg Val Ala Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly		
	660 665 670	
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Val Ala Val Val Leu Gly Ala Val Val Ala Ala Met Gly Phe Tyr Ser		
	675 680 685	
tac ctg ggt gtc ccc tcc tct ctg gtc atc att caa gtg gta cct ttc		2112
Tyr Leu Gly Val Pro Ser Ser Leu Val Ile Ile Gln Val Val Pro Phe		
	690 695 700	
ctg gtg ctg gct gtg gga gct gac aac atc ttc atc ttt gtt ctt gag		2160
Leu Val Leu Ala Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu		

705	710	715	720	
tac cag agg ctg cct agg atg ccc ggg gag cag cga gag gct cac att				2208
Tyr Gln Arg Leu Pro Arg Met Pro Gly Glu Gln Arg Glu Ala His Ile				
	725	730	735	
ggc cgc acc ctg ggt agt gtg gcc ccc agc atg ctg ctg tgc agc ctc				2256
Gly Arg Thr Leu Gly Ser Val Ala Pro Ser Met Leu Leu Cys Ser Leu				
	740	745	750	
tct gag gcc atc tgc ttc ttt cta ggg gcc ctg acc tcc atg cca gct				2304
Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Ser Met Pro Ala				
	755	760	765	
gtg agg acc ttt gcc ttg acc tct ggc tta gca atc atc ttt gac ttc				2352
Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Ile Ile Phe Asp Phe				
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Leu Leu Gln Met Thr Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys				
	785	790	795	800
agg cag gag gcc tct cgc ccc gac gtc gtg tgc tgc ttt tca agc cga				2448
Arg Gln Glu Ala Ser Arg Pro Asp Val Val Cys Cys Phe Ser Ser Arg				
	805	810	815	
aat ctg ccc cca ccg aaa caa aaa gaa ggc ctc tta ctt tgc ttc ttc				2496
Asn Leu Pro Pro Pro Lys Gln Lys Glu Gly Leu Leu Leu Cys Phe Phe				
	820	825	830	
cgc aag ata tac act ccc ttc ctg ctg cac aga ttc atc cgc cct gtt				2544
Arg Lys Ile Tyr Thr Pro Phe Leu Leu His Arg Phe Ile Arg Pro Val				
	835	840	845	
gtg ctg ctg ctc ttt ctg gtc ctg ttt gga gca aac ctc tac tta atg				2592
Val Leu Leu Leu Phe Leu Val Leu Phe Gly Ala Asn Leu Tyr Leu Met				
	850	855	860	
tgc aac atc agc gtg ggg ctg gac cag gat ctg gct ctg ccc aag gat				2640
Cys Asn Ile Ser Val Gly Leu Asp Gln Asp Leu Ala Leu Pro Lys Asp				
	865	870	875	880
tcc tac ctg ata gac tac ttc ctc ttt ctg aac cgg tac ttg gaa gtg				2688
Ser Tyr Leu Ile Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Leu Glu Val				
	885	890	895	
ggg cct cca gtg tac ttt gac acc acc tca ggc tac aac ttt tcc acc				2736
Gly Pro Pro Val Tyr Phe Asp Thr Thr Ser Gly Tyr Asn Phe Ser Thr				
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gag gca ggc atg aac gcc att tgc tct agt gca ggc tgt gag agc ttc				2784
Glu Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Glu Ser Phe				
	915	920	925	
tcc cta acc cag aaa atc cag tat gcc agt gaa ttc cct aat cag tct				2832
Ser Leu Thr Gln Lys Ile Gln Tyr Ala Ser Glu Phe Pro Asn Gln Ser				
	930	935	940	
tat gtg gct att gct gca tcc tcc tgg gta gat gac ttc atc gac tgg				2880
Tyr Val Ala Ile Ala Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp				
	945	950	955	960

ctg acc cca tcc tcc tcc tgc tgc cgc att tat acc cgt ggc ccc cat	2928
Leu Thr Pro Ser Ser Ser Cys Cys Arg Ile Tyr Thr Arg Gly Pro His	
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aaa gat gag ttc tgt ccc tca acg gat act tcc ttc aac tgt ctc aaa	2976
Lys Asp Glu Phe Cys Pro Ser Thr Asp Thr Ser Phe Asn Cys Leu Lys	
980 985 990	
aac tgc atg aac cgc act ctg ggt ccc gtg aga ccc aca aca gaa cag	3024
Asn Cys Met Asn Arg Thr Leu Gly Pro Val Arg Pro Thr Thr Glu Gln	
995 1000 1005	
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Phe His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Thr Pro Asn Ile	
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Arg Cys Pro Lys Gly Gly Leu Ala Ala Tyr Arg Thr Ser Val Asn	
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ttg agc tca gat ggc cag att ata gcc tcc cag ttc atg gcc tac	3159
Leu Ser Ser Asp Gly Gln Ile Ile Ala Ser Gln Phe Met Ala Tyr	
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His Lys Pro Leu Arg Asn Ser Gln Asp Phe Thr Glu Ala Leu Arg	
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Ala Ser Arg Leu Leu Ala Ala Asn Ile Thr Ala Glu Leu Arg Lys	
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Val Pro Gly Thr Asp Pro Asn Phe Glu Val Phe Pro Tyr Thr Ile	
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Ser Asn Val Phe Tyr Gln Gln Tyr Leu Thr Val Leu Pro Glu Gly	
1100 1105 1110	
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Ile Phe Thr Leu Ala Leu Cys Phe Val Pro Thr Phe Val Val Cys	
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Tyr Leu Leu Leu Gly Leu Asp Ile Arg Ser Gly Ile Leu Asn Leu	
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Val Trp Gly Ile Ser Tyr Asn Ala Val Ser Leu Ile Asn Leu Val	
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1175 1180 1185	

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Ser Phe Ala Val Ser Thr Lys Pro Thr Arg Leu Glu Arg Ala Lys	
1190 1195 1200	
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Asp Ala Thr Ile Phe Met Gly Ser Ala Val Phe Ala Gly Val Ala	
1205 1210 1215	
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Met Thr Asn Phe Pro Gly Ile Leu Ile Leu Gly Phe Ala Gln Ala	
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cag ctt atc cag att ttc ttc ttc cgc ctc aac ctc ctg atc acc	3744
Gln Leu Ile Gln Ile Phe Phe Phe Arg Leu Asn Leu Leu Ile Thr	
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Leu Leu Gly Leu Leu His Gly Leu Val Phe Leu Pro Val Val Leu	
1250 1255 1260	
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Ser Tyr Leu Gly Pro Asp Val Asn Gln Ala Leu Val Leu Glu Glu	
1265 1270 1275	
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Lys Leu Ala Thr Glu Ala Ala Met Val Ser Glu Pro Ser Cys Pro	
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Gln Tyr Pro Phe Pro Ala Asp Ala Asn Thr Ser Asp Tyr Val Asn	
1295 1300 1305	
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Tyr Gly Phe Asn Pro Glu Phe Ile Pro Glu Ile Asn Ala Ala Ser	
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Thr Ser Leu Ser Asn Ile Ser Cys Leu Ser Asn Thr Pro Ala Arg His
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Val Thr Gly Asp His Leu Ala Leu Leu Gln Arg Val Cys Pro Arg Leu
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Tyr Asn Gly Pro Asn Asp Thr Tyr Ala Cys Cys Ser Thr Lys Gln Leu
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Val Ser Leu Asp Ser Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg
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Cys Pro Ala Cys Ser Glu Asn Phe Val Ser Ile His Cys His Asn Thr
 115 120 125

Cys Ser Pro Asp Gln Ser Leu Phe Ile Asn Val Thr Arg Val Val Gln
 130 135 140

Arg Asp Pro Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr
 145 150 155 160

Gln Arg Ser Phe Ala Glu Lys Ala Tyr Glu Ser Cys Ser Arg Val Arg
 165 170 175

Ile Pro Ala Ala Ala Ser Leu Ala Val Gly Ser Met Cys Gly Val Tyr
 180 185 190

Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp
 195 200 205

Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu
 210 215 220

Pro Gly Gln Ala Leu Ala Asp Gly Met Lys Pro Leu Asp Gly Lys Ile
 225 230 235 240

Thr Pro Cys Asn Glu Ser Gln Gly Glu Asp Ser Ala Ala Cys Ser Cys
 245 250 255

Gln Asp Cys Ala Ala Ser Cys Pro Val Ile Pro Pro Pro Pro Ala Leu
 260 265 270

Arg Pro Ser Phe Tyr Met Gly Arg Met Pro Gly Trp Leu Ala Leu Ile

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Ile Ile Phe Thr Ala Val Phe Val Leu Leu Ser Val Val Leu Val Tyr				
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Leu Arg Val Ala Ser Asn Arg Asn Lys Asn Lys Thr Ala Gly Ser Gln				
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Glu Ala Pro Asn Leu Pro Arg Lys Arg Arg Phe Ser Pro His Thr Val				
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				335
Leu Gly Arg Phe Phe Glu Ser Trp Gly Thr Arg Val Ala Ser Trp Pro				
		340		345
				350
Leu Thr Val Leu Ala Leu Ser Phe Ile Val Val Ile Ala Leu Ser Val				
		355		360
				365
Gly Leu Thr Phe Ile Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser				
		370		375
				380
Ala Pro Lys Ser Gln Ala Arg Lys Glu Lys Ala Phe His Asp Glu His				
385		390		395
				400
Phe Gly Pro Phe Phe Arg Thr Asn Gln Ile Phe Val Thr Ala Lys Asn				
		405		410
				415
Arg Ser Ser Tyr Lys Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe				
		420		425
				430
Ser Gly Ile Leu Ser Leu Asp Leu Leu Gln Glu Leu Leu Glu Leu Gln				
		435		440
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Glu Arg Leu Arg His Leu Gln Val Trp Ser His Glu Ala Gln Arg Asn				
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Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro His Asn Thr				
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Ser Leu Thr Asp Cys Cys Val Asn Ser Leu Leu Gln Tyr Phe Gln Asn				
		485		490
				495
Asn His Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Asn Gly Gln				
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				510
Thr Ser Leu Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala				
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				525

Pro Leu Thr Tyr Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Ile Ala
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Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Val Gly Gly Tyr Gln
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Gly Thr Asp Tyr Ser Glu Ala Glu Ala Leu Ile Ile Thr Phe Ser Ile
565 570 575

Asn Asn Tyr Pro Ala Asp Asp Pro Arg Met Ala His Ala Lys Leu Trp
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Glu Glu Ala Phe Leu Lys Glu Met Gln Ser Phe Gln Arg Ser Thr Ala
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Asp Lys Phe Gln Ile Ala Phe Ser Ala Glu Arg Ser Leu Glu Asp Glu
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Ile Asn Arg Thr Thr Ile Gln Asp Leu Pro Val Phe Ala Ile Ser Tyr
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Leu Ile Val Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Arg
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Trp Ser Arg Val Ala Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly
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Val Ala Val Val Leu Gly Ala Val Val Ala Ala Met Gly Phe Tyr Ser
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Tyr Leu Gly Val Pro Ser Ser Leu Val Ile Ile Gln Val Val Pro Phe
690 695 700

Leu Val Leu Ala Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu
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Tyr Gln Arg Leu Pro Arg Met Pro Gly Glu Gln Arg Glu Ala His Ile
725 730 735

Gly Arg Thr Leu Gly Ser Val Ala Pro Ser Met Leu Leu Cys Ser Leu
740 745 750

Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Ser Met Pro Ala
755 760 765

Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Ile Ile Phe Asp Phe
770 775 780

Leu Leu Gln Met Thr Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys
785 790 795 800

Arg Gln Glu Ala Ser Arg Pro Asp Val Val Cys Cys Phe Ser Ser Arg
805 810 815

Asn Leu Pro Pro Pro Lys Gln Lys Glu Gly Leu Leu Leu Cys Phe Phe
820 825 830

Arg Lys Ile Tyr Thr Pro Phe Leu Leu His Arg Phe Ile Arg Pro Val
835 840 845

Val Leu Leu Leu Phe Leu Val Leu Phe Gly Ala Asn Leu Tyr Leu Met
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Cys Asn Ile Ser Val Gly Leu Asp Gln Asp Leu Ala Leu Pro Lys Asp
865 870 875 880

Ser Tyr Leu Ile Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Leu Glu Val
885 890 895

Gly Pro Pro Val Tyr Phe Asp Thr Thr Ser Gly Tyr Asn Phe Ser Thr
900 905 910

Glu Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Glu Ser Phe
915 920 925

Ser Leu Thr Gln Lys Ile Gln Tyr Ala Ser Glu Phe Pro Asn Gln Ser
930 935 940

Tyr Val Ala Ile Ala Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp
945 950 955 960

Leu Thr Pro Ser Ser Ser Cys Cys Arg Ile Tyr Thr Arg Gly Pro His
965 970 975

Lys Asp Glu Phe Cys Pro Ser Thr Asp Thr Ser Phe Asn Cys Leu Lys
980 985 990

Asn Cys Met Asn Arg Thr Leu Gly Pro Val Arg Pro Thr Thr Glu Gln
995 1000 1005

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Ala	Ser	Arg	Leu	Leu	Ala	Ala	Asn	Ile	Thr	Ala	Glu	Leu	Arg	Lys
1070						1075					1080			
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1085						1090					1095			
Ser	Asn	Val	Phe	Tyr	Gln	Gln	Tyr	Leu	Thr	Val	Leu	Pro	Glu	Gly
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Gln Tyr Pro Phe Pro Ala Asp	Ala Asn Thr Ser Asp	Tyr Val Asn		
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Ala Glu Ala Gly Leu Arg Gly Trp Leu Leu Trp Ala Leu Leu Leu Arg	
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Leu Ala Gln Ser Glu Pro Tyr Thr Thr Ile His Gln Pro Gly Tyr Cys	
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Ala Phe Tyr Asp Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Ser Leu	
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Met Thr Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg Lys	
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Ile Thr Gly Asp His Leu Ile Leu Leu Gln Lys Ile Cys Pro Arg Leu	
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Tyr Thr Gly Pro Asn Thr Gln Ala Cys Cys Ser Ala Lys Gln Leu Val	
85 90 95	
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Ser Leu Glu Ala Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg Cys	
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Pro Ala Cys Ser Asp Asn Phe Val Asn Leu His Cys His Asn Thr Cys	
115 120 125	
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Ser Pro Asn Gln Ser Leu Phe Ile Asn Val Thr Arg Val Ala Gln Leu	
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Gly Ala Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr Gln	
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His Ser Phe Ala Glu Gln Ser Tyr Asp Ser Cys Ser Arg Val Arg Val	
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Pro Ala Ala Ala Thr Leu Ala Val Gly Thr Met Cys Gly Val Tyr Gly	
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Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp Thr	
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Arg Cys Asn Glu Ser Gln Gly Asp Asp Val Ala Thr Cys Ser Cys Gln	
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Asp Cys Ala Ala Ser Cys Pro Ala Ile Ala Arg Pro Gln Ala Leu Asp	
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Ser Thr Phe Tyr Leu Gly Gln Met Pro Gly Ser Leu Val Leu Ile Ile	
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Ile Leu Cys Ser Val Phe Ala Val Val Thr Ile Leu Leu Val Gly Phe	
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Arg Val Ala Pro Ala Arg Asp Lys Ser Lys Met Val Asp Pro Lys Lys	
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Thr Ile Leu Val Leu Ser Val Ile Pro Val Val Ala Leu Ala Ala Gly	
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Leu Val Phe Thr Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser Ala	
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Pro Asn Ser Gln Ala Arg Ser Glu Lys Ala Phe His Asp Gln His Phe	
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Gly Pro Phe Phe Arg Thr Asn Gln Val Ile Leu Thr Ala Pro Asn Arg	
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Ser Ser Tyr Arg Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe Ser	
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Gly Ile Leu Asp Leu Asp Leu Leu Leu Glu Leu Leu Glu Leu Gln Glu	
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Leu	Tyr	Asp	Cys	Cys	Ile	Asn	Ser	Leu	Leu	Gln	Tyr	Phe	Gln	Asn	Asn		
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Arg	Thr	Leu	Leu	Leu	Leu	Thr	Ala	Asn	Gln	Thr	Leu	Met	Gly	Gln	Thr		
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Ser	Gln	Val	Asp	Trp	Lys	Asp	His	Phe	Leu	Tyr	Cys	Ala	Asn	Ala	Pro		
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ctc	acc	ttc	aag	gat	ggc	aca	gcc	ctg	gcc	ctg	agc	tgc	atg	gct	gac		1691
Leu	Thr	Phe	Lys	Asp	Gly	Thr	Ala	Leu	Ala	Leu	Ser	Cys	Met	Ala	Asp		
530					535				540					545			
tac	ggg	gcc	cct	gtc	ttc	ccc	ttc	ctt	gcc	att	ggg	ggg	tac	aaa	gga		1739
Tyr	Gly	Ala	Pro	Val	Phe	Pro	Phe	Leu	Ala	Ile	Gly	Gly	Tyr	Lys	Gly		
				550				555						560			
aag	gac	tat	tct	gag	gca	gag	gcc	ctg	atc	atg	acg	ttc	tcc	ctc	aac		1787
Lys	Asp	Tyr	Ser	Glu	Ala	Glu	Ala	Leu	Ile	Met	Thr	Phe	Ser	Leu	Asn		
			565					570					575				
aat	tac	cct	gcc	ggg	gac	ccc	cgt	ctg	gcc	cag	gcc	aag	ctg	tgg	gag		1835
Asn	Tyr	Pro	Ala	Gly	Asp	Pro	Arg	Leu	Ala	Gln	Ala	Lys	Leu	Trp	Glu		
		580					585					590					
gag	gcc	ttc	tta	gag	gaa	atg	cga	gcc	ttc	cag	cgt	cgg	atg	gct	ggc		1883
Glu	Ala	Phe	Leu	Glu	Glu	Met	Arg	Ala	Phe	Gln	Arg	Arg	Met	Ala	Gly		
	595					600				605							
atg	ttc	cag	gtc	acg	ttc	atg	gct	gag	cgc	tct	ctg	gaa	gac	gag	atc		1931
Met	Phe	Gln	Val	Thr	Phe	Met	Ala	Glu	Arg	Ser	Leu	Glu	Asp	Glu	Ile		
610					615				620					625			
aat	cgc	acc	aca	gct	gaa	gac	ctg	ccc	atc	ttt	gcc	acc	agc	tac	att		1979
Asn	Arg	Thr	Thr	Ala	Glu	Asp	Leu	Pro	Ile	Phe	Ala	Thr	Ser	Tyr	Ile		
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gtc	ata	ttc	ctg	tac	atc	tct	ctg	gcc	ctg	ggc	agc	tat	tcc	agc	tgg		2027
Val	Ile	Phe	Leu	Tyr	Ile	Ser	Leu	Ala	Leu	Gly	Ser	Tyr	Ser	Ser	Trp		
			645					650					655				
agc	cga	gtg	atg	gtg	gac	tcc	aag	gcc	acg	ctg	ggc	ctc	ggc	ggg	gtg		2075
Ser	Arg	Val	Met	Val	Asp	Ser	Lys	Ala	Thr	Leu	Gly	Leu	Gly	Gly	Val		
		660					665					670					
gcc	gtg	gtc	ctg	gga	gca	gtc	atg	gct	gcc	atg	ggc	ttc	ttc	tcc	tac		2123
Ala	Val	Val	Leu	Gly	Ala	Val	Met	Ala	Ala	Met	Gly	Phe	Phe	Ser	Tyr		
	675					680					685						
ttg	ggt	atc	cgc	tcc	tcc	ctg	gtc	atc	ctg	caa	gtg	gtt	cct	ttc	ctg		2171
Leu	Gly	Ile	Arg	Ser	Ser	Leu	Val	Ile	Leu	Gln	Val	Val	Pro	Phe	Leu		

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cag agg ctg ccc cgg agg cct ggg gag cca cga gag gtc cac att ggg	Gln Arg Leu Pro Arg Arg Pro Gly Glu Pro Arg Glu Val His Ile Gly	2267		
725	730	735		
cga gcc cta ggc agg gtg gct ccc agc atg ctg ttg tgc agc ctc tct	Arg Ala Leu Gly Arg Val Ala Pro Ser Met Leu Leu Cys Ser Leu Ser	2315		
740	745	750		
gag gcc atc tgc ttc ttc cta ggg gcc ctg acc ccc atg cca gct gtg	Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala Val	2363		
755	760	765		
cgg acc ttt gcc ctg acc tct ggc ctt gca gtg atc ctt gac ttc ctc	Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Val Ile Leu Asp Phe Leu	2411		
770	775	780	785	
ctg cag atg tca gcc ttt gtg gcc ctg ctc tcc ctg gac agc aag agg	Leu Gln Met Ser Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys Arg	2459		
790	795	800		
cag gag gcc tcc cgg ttg gac gtc tgc tgc tgt gtc aag ccc cag gag	Gln Glu Ala Ser Arg Leu Asp Val Cys Cys Cys Val Lys Pro Gln Glu	2507		
805	810	815		
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820	825	830		
aag gct tat gcc ccc ttc ctg ctg cac tgg atc act cga ggt gtt gtg	Lys Ala Tyr Ala Pro Phe Leu Leu His Trp Ile Thr Arg Gly Val Val	2603		
835	840	845		
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850	855	860	865	
cac atc agc gtg gga ctg gac cag gag ctg gcc ctg ccc aag gac tcg	His Ile Ser Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp Ser	2699		
870	875	880		
tac ctg ctt gac tat ttc ctc ttt ctg aac cgc tac ttc gag gtg ggg	Tyr Leu Leu Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Phe Glu Val Gly	2747		
885	890	895		
gcc ccg gtg tac ttt gtt acc acc ttg ggc tac aac ttc tcc agc gag	Ala Pro Val Tyr Phe Val Thr Thr Leu Gly Tyr Asn Phe Ser Ser Glu	2795		
900	905	910		
gct ggg atg aat gcc atc tgc tcc agt gca ggc tgc aac aac ttc tcc	Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Asn Asn Phe Ser	2843		
915	920	925		
ttc acc cag aag atc cag tat gcc aca gag ttc cct gag cag tct tac	Phe Thr Gln Lys Ile Gln Tyr Ala Thr Glu Phe Pro Glu Gln Ser Tyr	2891		
930	935	940	945	

ctg gcc atc cct gcc tcc tcc tgg gtg gat gac ttc att gac tgg ctg Leu Ala Ile Pro Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp Leu 950 955 960	2939
acc ccg tcc tcc tgc tgc cgc ctt tat ata tct ggc ccc aat aag gac Thr Pro Ser Ser Cys Cys Arg Leu Tyr Ile Ser Gly Pro Asn Lys Asp 965 970 975	2987
aag ttc tgc ccc tcg acc gtc aac tct ctg aac tgc cta aag aac tgc Lys Phe Cys Pro Ser Thr Val Asn Ser Leu Asn Cys Leu Lys Asn Cys 980 985 990	3035
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ccc aaa ggc ggc ctg gca gca tac agc acc tct gtg aac ttg act Pro Lys Gly Gly Leu Ala Ala Tyr Ser Thr Ser Val Asn Leu Thr 1025 1030 1035	3173
tca gat ggc cag gtt tta gac aca gtt gcc att ctg tca ccc agg Ser Asp Gly Gln Val Leu Asp Thr Val Ala Ile Leu Ser Pro Arg 1040 1045 1050	3218
ctg gag tac agt ggc aca atc tcg gct cac tgc aac ctc tac ctc Leu Glu Tyr Ser Gly Thr Ile Ser Ala His Cys Asn Leu Tyr Leu 1055 1060 1065	3263
ctg gat tca gcc tcc agg ttc atg gcc tat cac aag ccc ctg aaa Leu Asp Ser Ala Ser Arg Phe Met Ala Tyr His Lys Pro Leu Lys 1070 1075 1080	3308
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ccg gct ttt gag gtc ttc ccc tac acg atc acc aat gtg ttt tat Pro Ala Phe Glu Val Phe Pro Tyr Thr Ile Thr Asn Val Phe Tyr 1115 1120 1125	3443
gag cag tac ctg acc atc ctc cct gag ggg ctc ttc atg ctc agc Glu Gln Tyr Leu Thr Ile Leu Pro Glu Gly Leu Phe Met Leu Ser 1130 1135 1140	3488
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<212> PRT

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Cys Ala Phe Tyr Asp Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Ser
 35 40 45

Leu Met Thr Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg
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Lys Ile Thr Gly Asp His Leu Ile Leu Leu Gln Lys Ile Cys Pro Arg
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Leu Tyr Thr Gly Pro Asn Thr Gln Ala Cys Cys Ser Ala Lys Gln Leu
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Val Ser Leu Glu Ala Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg

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Gln His Ser Phe Ala Glu Gln Ser Tyr Asp Ser Cys Ser Arg Val Arg		
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Val Pro Ala Ala Ala Thr Leu Ala Val Gly Thr Met Cys Gly Val Tyr		
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Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp		
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Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu		
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Pro Gly Gln Ala Val Gly Ser Gly Ile Gln Pro Leu Asn Glu Gly Val		
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Ala Arg Cys Asn Glu Ser Gln Gly Asp Asp Val Ala Thr Cys Ser Cys		
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Gln Asp Cys Ala Ala Ser Cys Pro Ala Ile Ala Arg Pro Gln Ala Leu		
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Asp Ser Thr Phe Tyr Leu Gly Gln Met Pro Gly Ser Leu Val Leu Ile		
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Ile Ile Leu Cys Ser Val Phe Ala Val Val Thr Ile Leu Leu Val Gly		
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Phe Arg Val Ala Pro Ala Arg Asp Lys Ser Lys Met Val Asp Pro Lys		
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Lys Gly Thr Ser Leu Ser Asp Lys Leu Ser Phe Ser Thr His Thr Leu		
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Leu Gly Gln Phe Phe Gln Gly Trp Gly Thr Trp Val Ala Ser Trp Pro		
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Leu Thr Ile Leu Val Leu Ser Val Ile Pro Val Val Ala Leu Ala Ala
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Gly Leu Val Phe Thr Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser
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Phe Gly Pro Phe Phe Arg Thr Asn Gln Val Ile Leu Thr Ala Pro Asn
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Arg Ser Ser Tyr Arg Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe
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Ser Gly Ile Leu Asp Leu Asp Leu Leu Leu Glu Leu Leu Glu Leu Gln
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Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Asp Asn Thr
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Ser Leu Tyr Asp Cys Cys Ile Asn Ser Leu Leu Gln Tyr Phe Gln Asn
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Asn Arg Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Met Gly Gln
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Thr Ser Gln Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala
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Pro Leu Thr Phe Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Met Ala
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Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Ile Gly Gly Tyr Lys
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Gly Lys Asp Tyr Ser Glu Ala Glu Ala Leu Ile Met Thr Phe Ser Leu
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Glu Glu Ala Phe Leu Glu Glu Met Arg Ala Phe Gln Arg Arg Met Ala
 595 600 605

Gly Met Phe Gln Val Thr Phe Met Ala Glu Arg Ser Leu Glu Asp Glu
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Ile Asn Arg Thr Thr Ala Glu Asp Leu Pro Ile Phe Ala Thr Ser Tyr
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Ile Val Ile Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Ser
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Trp Ser Arg Val Met Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly
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Val Ala Val Val Leu Gly Ala Val Met Ala Ala Met Gly Phe Phe Ser
 675 680 685

Tyr Leu Gly Ile Arg Ser Ser Leu Val Ile Leu Gln Val Val Pro Phe
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Leu Val Leu Ser Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu
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Tyr Gln Arg Leu Pro Arg Arg Pro Gly Glu Pro Arg Glu Val His Ile
 725 730 735

Gly Arg Ala Leu Gly Arg Val Ala Pro Ser Met Leu Leu Cys Ser Leu
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Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala
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Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Val Ile Leu Asp Phe
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Leu Leu Gln Met Ser Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys
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Gln Lys Ala Tyr Ala Pro Phe Leu Leu His Trp Ile Thr Arg Gly Val
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Val Leu Leu Leu Phe Leu Ala Leu Phe Gly Val Ser Leu Tyr Ser Met
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Cys His Ile Ser Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp
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Ser Tyr Leu Leu Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Phe Glu Val
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Gly Ala Pro Val Tyr Phe Val Thr Thr Leu Gly Tyr Asn Phe Ser Ser
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Glu Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Asn Asn Phe
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Ser Phe Thr Gln Lys Ile Gln Tyr Ala Thr Glu Phe Pro Glu Gln Ser
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Tyr Leu Ala Ile Pro Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp
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Asp Lys Phe Cys Pro Ser Thr Val Asn Ser Leu Asn Cys Leu Lys Asn
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Cys Met Ser Ile Thr Met Gly Ser Val Arg Pro Ser Val Glu Gln Phe
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His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Arg Pro Asn Ile Lys
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Cys Pro Lys Gly Gly Leu Ala Ala Tyr Ser Thr Ser Val Asn Leu
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Thr Ser Asp Gly Gln Val Leu Asp Thr Val Ala Ile Leu Ser Pro
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Arg Leu Glu Tyr Ser Gly Thr Ile Ser Ala His Cys Asn Leu Tyr
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Leu Leu Asp Ser Ala Ser Arg Phe Met Ala Tyr His Lys Pro Leu

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Leu Ala Ala Asn Ile Thr Ala	Asp Leu Arg Lys Val	Pro Gly Thr		
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Asp Pro Ala Phe Glu Val Phe	Pro Tyr Thr Ile Thr	Asn Val Phe		
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Tyr Glu Gln Tyr Leu Thr Ile	Leu Pro Glu Gly Leu	Phe Met Leu		
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Ser Leu Cys Leu Val Pro Thr	Phe Ala Val Ser Cys	Leu Leu Leu		
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Gly Leu Asp Leu Arg Ser Gly	Leu Leu Asn Leu Leu	Ser Ile Val		
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Met Ile Leu Val Asp Thr Val	Gly Phe Met Ala Leu	Trp Gly Ile		
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Met Ser Val Glu Phe Val Ser	His Ile Thr Arg Ser	Phe Ala Ile		
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Ser Thr Lys Pro Thr Trp Leu	Glu Arg Ala Lys Glu	Ala Thr Ile		
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Ser Met Gly Ser Ala Val Phe	Ala Gly Val Ala Met	Thr Asn Leu		
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Pro Gly Ile Leu Val Leu Gly	Leu Ala Lys Ala Gln	Leu Ile Gln		
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Ile Phe Phe Phe Arg Leu Asn	Leu Leu Ile Thr Leu	Leu Gly Leu		
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Leu His Gly Leu Val Phe Leu	Pro Val Ile Leu Ser	Tyr Val Gly		
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